

CITY OF ALAMEDA

GUIDANCE FOR DEVELOPMENT AND REDEVELOPMENT PROJECTS

REQUIREMENTS FOR STORMWATER QUALITY PROTECTION



Stormwater runoff from urbanized areas is the largest source of pollution to the nation's waters. Local agencies in urbanized portions of the San Francisco Bay Area are responsible for controlling stormwater pollution by complying with the regional municipal stormwater National Pollutant Discharge Elimination System (NPDES) permit (Municipal Permit), issued by the San Francisco Bay Regional Water Quality Control Board.

Projects subject to the City of Alameda (City)'s planning and development review process need to meet stormwater quality protection measure requirements set forth by Provision C.3 of the Municipal Permit.

To meet Provision C.3 requirements, projects must include effective site design techniques and appropriate pollutant source control measures. Additionally, **projects creating or replacing 10,000 square feet or more of impervious surface** shall properly design, install and maintain stormwater treatment measures that manage the quantity and quality of stormwater runoff.

This handout provides guidance to help the project proponents meet the required stormwater quality protection measures and is outlined as follows:

1. **Project Impervious Surface Area Calculation Form (p. 2) - *Applicable to all projects***
2. **Site Design Measures (p. 2) - *Applicable to all projects***
3. **Source control measures requirements for commercial and residential projects (pp. 3-6) - *Applicable to all projects***
4. **Requirements for stormwater treatment measures (pp. 6-9) - *Applicable only to projects creating or replacing 10,000 square feet or more of impervious surface***

REQUIRMENTS FOR STORMWATER QUALITY PROTECTION

1. PROJECT IMPERVIOUS SURFACE AREA CALCULATION FORM

The project proponent/developer shall submit a completed Impervious Surface Form to the City of Alameda Public Works Department for review as a prerequisite to the issuance of initial planning approvals or a building or grading permit, as appropriate. The form shall include a table showing the amount of pervious and impervious area (indicated in units of square feet) prior to and after the proposed development. A copy of this impervious surface area calculation form is attached and can also be obtained by contacting the City's Public Works Department Clean Water Program staff, telephone 510-749-5840.

2. SITE DESIGN MEASURES

All projects need to implement site design features appropriate to the development site as follows:

- a) Protect natural areas and preserve open space.
- b) Minimize impervious surface areas - especially directly-connected impervious surface areas.
- c) Cluster structures and paved areas.
- d) Increase pervious areas.
- e) Utilize landscaped areas between impervious areas as storm drainage treatment features.
- f) Design roof drains to discharge and drain to a vegetated or otherwise unpaved area wherever practicable.
- g) Include design techniques such as, but not limited to:
 - vegetated swales
 - vegetated buffer zones
 - bioretention units
 - retention/detention basins and ponds
 - tree well systems
 - incorporation of pervious surface areas

Applicants may refer to the Bay Area Stormwater Management Agencies Association (BASMAA) *Start at the Source Manual* for technical guidance. This manual is available for reference or can be downloaded at the Alameda Countywide Clean Water Program's website at:

http://www.cleanwaterprogram.org/businesses_developers.htm

REQUIREMENTS FOR STORMWATER QUALITY PROTECTION

3. SOURCE CONTROL MEASURES REQUIREMENTS

Source control measures reduce stormwater pollutants by keeping pollutants from coming in contact with stormwater. This section describes source control measures that apply to:

- A) All commercial and residential projects**
- B) Commercial projects only**
- C) Residential projects only**

A) Source Control Requirements for Commercial and Residential Projects

1. Interior Floor Drains

- Interior floor drains shall be plumbed to the sanitary sewer system and shall not be connected to storm drains.
- The applicant shall obtain the necessary approvals from the City of Alameda's permitting office to connect and discharge to the City's sanitary sewer system.

2. Fire Sprinkler

- Fire sprinkler test water shall drain to landscaped areas where feasible or drain to the sanitary sewer system.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.

3. Trash Enclosure

- Provide a roofed and enclosed area for dumpsters and recycling containers.
- Trash enclosure areas shall be designed to prevent water run-on to the area and runoff from the area and to contain litter and trash, so that it is not dispersed by the wind or runoff during waste removal.
- Runoff from trash enclosures, recycling areas or similar facilities shall not discharge to the storm drain system.
- Any drains installed in or beneath dumpsters, compactors, and/or tallow bin areas serving food service facilities shall be connected to a grease removal device and/or treatment device prior to discharging to the sanitary sewer.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.

4. Pools, Fountains and Spas

- Discharges from swimming pools, hot tubs, spas and/or fountains shall not be connected to nor designed to discharge to the storm sewer system.
- Boiler drain lines shall not discharge to the storm drain system.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.

5. Landscaping

- Design landscaping to minimize irrigation and runoff, promote surface infiltration where appropriate, and minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.
- Consider pest-resistant landscaping and design features and the use of integrated pest management (IPM) principles and techniques.
- Consider incorporating the guidance of Alameda County's Bay Friendly Landscaping Program in the design, construction and maintenance of all landscaped areas.

REQUIREMENTS FOR STORMWATER QUALITY PROTECTION

- Where feasible, design landscaping to treat stormwater runoff.
- Shoreline landscaping and restoration efforts shall incorporate native trees, shrubs, and ground cover species into the landscape plan to the maximum extent practicable.
- Landscaping/restoration designs shall comply with the City of Alameda Street Tree Management Plan and the City's water-efficient landscaping requirements and, when in the public right-of-way, shall also be approved by the Maintenance Superintendent.

6. Marking of Storm Drain Inlets

All on-site storm drain inlets must be labeled "No Dumping - Drains to Bay" or equivalent and maintained to be legible, using methods approved by the City of Alameda.

B) Specific Source Control Measures Requirements for Commercial Projects

Note the source control measures listed below are intended to be applied to projects as appropriate. For example, loading dock measures would only apply to projects that include loading docks.

1. Loading Docks

- Loading docks shall be graded to minimize run-on to and runoff from the loading area.
- Roof downspouts shall be positioned to direct stormwater away from the loading area. Stormwater runoff from loading dock areas shall be connected to a post-construction stormwater treatment measure(s) prior to discharge to the storm drain system.
- The applicant shall obtain any necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.
- All loading dock areas must be designed to minimize "run-on" or runoff from the area.
- Loading dock door skirts between the trailers and the building shall be installed to prevent exposure of loading activities to rain, unless one of the following conditions apply: the loading dock is covered, or the applicant demonstrates that rainfall will not result in an untreated discharge to the storm drain system.

2. Outdoor Equipment and Material Storage Areas

- All outdoor equipment and materials storage areas shall be covered and bermed, or shall be designed with BMPs to limit the potential for stormwater runoff to contact pollutants.
- Storage areas containing non-hazardous liquids shall be covered by a roof and contained by berms, dikes, liners, vaults or similar spill containment devices.
- All on-site hazardous materials and wastes, as defined and/or regulated by the California Public Health Code and the Alameda County Environmental Health Department (ACEHD), must be used and managed in compliance with the applicable regulations and the facility hazardous materials management plan approved by ACEHD.

3. Food Service Facilities

- Food service facilities (including restaurants and grocery stores) shall have a sink or other floor mat, container, and equipment cleaning area, which is connected to a grease interceptor prior to discharging to the sanitary sewer system.
- The cleaning area shall be large enough to clean the largest mat or piece of equipment to be cleaned. The cleaning area shall be indoors or in a roofed area outdoors; any of these areas must be plumbed to the sanitary sewer.
- Outdoor cleaning areas shall be designed to prevent stormwater run-on from entering the sanitary sewer and to prevent stormwater run-off from carrying pollutants to the storm drain.
- Signs shall be posted indicating that all food service equipment washing activities shall be conducted in this area.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.

REQUIRMENTS FOR STORMWATER QUALITY PROTECTION

4. Rooftop Equipment

- Roof top equipment shall drain to the sanitary sewer or be covered and have no discharge to the storm drain.
- Unpolluted condensate from air conditioning units shall be directed to landscaped areas or the ground wherever feasible in preference to discharging to a storm drainage system.
- The applicant shall obtain any necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.

5. Process Activities

- Process activities shall be performed either indoors or in roofed outdoor areas.
- If performed outdoors, the area shall be designed to prevent run-on to and runoff from the area with process activities.
- Process equipment areas shall drain to the sanitary sewer system.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office and, in the case of industrial wastewater, East Bay Municipal Utilities District (EBMUD) to connect and discharge to the City's sanitary sewer system.

6. Parking Garages

- Interior level parking garage floor drains receiving non-stormwater discharges shall be connected to the sanitary sewer system.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.
- The applicant may be required to install a water treatment device prior to discharging to the sanitary sewer system.

7. Commercial Car Washes

- Commercial car wash facilities shall be designed and operated such that no runoff from the facility is discharged to the storm drain system.
- Wastewater from the facility shall discharge to the sanitary.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.

8. Vehicle/Equipment Washes

- Wastewater from vehicle and equipment washing operations shall not be discharged to the storm drain system.
- Any outdoor washing or pressure washing must be managed in such a way that there is no discharge of soaps or other pollutants to the storm drain.
- Commercial/industrial facilities having vehicle/equipment cleaning needs shall provide a roofed, bermed area for washing activities.
- A sign shall be posted indicating the location and allowed uses in the designated wash area.
- Vehicle/equipment washing areas shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.

9. Vehicle/Equipment Repair and Maintenance

- Vehicle/equipment repair and maintenance shall be performed in a designated area indoors, or if such services must be performed outdoors, in a covered area designed to prevent the run-on and runoff of stormwater and to contain any non-stormwater discharges.
- Secondary containment shall be provided for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored.

REQUIREMENTS FOR STORMWATER QUALITY PROTECTION

- Drains shall not be installed within the secondary containment areas.
- Vehicle service facilities shall not contain floor drains unless the floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer, for which an industrial waste discharge permit has been obtained.
- Tanks, containers or sinks used for parts cleaning or rinsing shall not be connected to the storm drain system.
- Tanks, containers or sinks used for such purposes may only be connected to the sanitary sewer system if allowed by an industrial waste discharge permit.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office and EBMUD to connect and discharge to the City's sanitary sewer system.

10. Fuel Dispensing Areas

- Fuel dispensing areas must be paved with portland cement concrete (or equivalent smooth impervious surface), with minimal slope necessary to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.
- The fuel dispensing area is defined as extending a minimum of 6.5 feet from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus a minimum of 1 foot, whichever is greater.
- The fuel dispensing area must be covered, and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area, as defined above.
- The cover must not drain onto the fuel dispensing area.

C) Specific Source Control Measures Requirements for Residential Projects

Note the source control measures listed below are intended to be applied to projects as appropriate. For example, measures controlling discharges from a common car wash area would only apply to projects that include a common car wash area.

1. Common Car Wash Area

- When a common car wash area is to be provided, no wash water shall discharge to the storm drain system.
- The car wash area should drain to the sanitary sewer system.
- The area should be covered and designed to prevent excess rainwater from entering the sanitary sewer.
- The applicant shall obtain the necessary approvals from the City of Alameda permitting office to connect and discharge to the City's sanitary sewer system.
- If no common car wash area exists, effective means shall be taken to discourage car washing on paved surfaces discharging to the storm drainage system.

2. Maintenance of Private Streets, Utilities, Landscape, and Common Areas

- All private streets, private utilities, landscaping and other privately owned common areas and facilities shall be maintained to protect stormwater runoff quality.
- Maintenance responsibilities shall include, but are not limited to: effective street sweeping of private paved roads, periodic cleaning of all storm drain inlets, maintenance of storm drain stencils to ensure legibility, and proper landscaping maintenance practices to prevent non-stormwater discharges to the storm sewer system.

REQUIREMENTS FOR STORMWATER QUALITY PROTECTION

4. REQUIREMENTS FOR STORMWATER TREATMENT MEASURES

Stormwater treatment measures are engineered systems designed to remove pollutants from stormwater. As per the Municipal Permit, the design of stormwater treatment measures must be hydraulically sized and approved, and the measures will require post-construction certification and maintenance assurances. The section below provides details of the following components that are required for the installation of stormwater treatment measures:

- A) Hydraulic sizing criteria
- B) Infiltration/groundwater protection criteria for infiltration devices
- C) Design criteria certification
- D) Post-construction certification report
- E) Operations and maintenance plan
- F) Operations and maintenance agreement

A) Hydraulic Sizing Criteria

Project proponents shall construct stormwater treatment measures that incorporate, **at a minimum, one of the hydraulic sizing design criteria** indicated in the City of Alameda's municipal stormwater NPDES Permit (Permit), Provision C.3, issued by the San Francisco Bay Regional Water Quality Control Board. As appropriate for each criterion, the stormwater treatment measure design shall use or appropriately analyze local rainfall data to be used for that criterion. The Permit hydraulic sizing criteria requirements are as follows:

1. Volume Hydraulic Design Basis
 - (a) The maximized stormwater quality capture volume for the area, based on historical rainfall records, determined using the formula and volume capture coefficients set forth in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ ASCE Manual of Practice No. 87, (1998), pages 175-178 (e.g., approximately the 85th percentile 24-hour storm runoff event); or
 - (b) The volume of annual runoff required to achieve eighty (80%) percent or more capture, determined in accordance with the methodology set forth in Appendix D of the California Stormwater Best Management Practices Handbook (1993), using local rainfall data.
2. Flow Hydraulic Design Basis

Treatment measures whose primary mode of action depends on flow capacity, such as swales, sand filters, or wetlands, shall be sized to treat:

 - (a) Ten percent (10%) of the 50-year peak flow rate; or
 - (b) The flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or
 - (c) The flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity.
3. Loading-Based Design as approved by the City Engineer that also meets the design basis criteria noted above.

Further detailed guidance on implementing the stormwater treatment measures hydraulic sizing criteria and the other Provision C.3 requirements can be found in the "Alameda Countywide Clean Water Program C.3 Stormwater Technical Guidance: A handbook for developers, builders and project applicants" (August 31, 2006). See www.cleanwaterprogram.org to reference and/or download this guidance document.

REQUIRMENTS FOR STORMWATER QUALITY PROTECTION

B) Infiltration and Groundwater Protection Criteria for Infiltration Devices

- Stormwater treatment measures that function primarily as infiltration devices shall, where practical, protect groundwater from pollutants that may be present in urban runoff.
- The vertical distance from the base of any infiltration device to the seasonal high groundwater mark shall be at least ten feet (10ø) unless a collection system or another diversion method collects a reasonable amount of the infiltration.
- Infiltration devices shall not be recommended as treatment measures for areas of industrial or light industrial activity, automotive repair shops, car washes, fleet storage areas and nurseries.

C) Design Criteria Certification

- Project proponent must submit a stamped, signed City of Alameda Certification Form (Stormwater Treatment Measure Design Criteria) from a Civil Engineer registered in the State of California and working for a firm included on the Bay Area Stormwater Management Agencies Association (BASMAA) list of Qualified Post-Construction Consultants.
- This certification for stormwater treatment facility design shall document that the treatment measure design plan meets the established sizing design criteria for stormwater treatment measures.
- The certification shall also specifically state which Provision C.3 hydraulic sizing design criteria is (are) being met in the treatment measure design(s).
- Copies of the City of Alameda Certification Form for Stormwater Treatment Measure Design Criteria and/or the BASMAA qualified consultants list can be obtained by contacting the Public Works Department Clean Water Program staff, telephone 510-749-5840.

D) Post Construction Certification Report

- Prior to the issuance of the certificate of occupancy or the final project approval (whichever is deemed appropriate by the Public Works Director) the project applicant shall submit to the Public Works Department a formal certification report (Report) from a Licensed Engineer, paid for by the developer, affirming that all project site stormwater treatment measures have been constructed per approved plans and specifications.
- As appropriate, the Report shall include, but not be limited to, assurances that:
 1. Imported materials used for the treatment measure(s) are certified by the supplier;
 2. Installation of these materials is per approved plans and specifications and meets the intent of the design engineer;
 3. Required on-site testing results conform with approved plans and specifications;
 4. Treatment measures conform to dimensions, grades and slopes on approved plans and specifications;
 5. All structural features of the treatment measures comply with plan specifications; the irrigation system is installed and functions as designed; healthy vegetation/ground cover is installed as shown on plans.
- A copy of a report-preparation checklist elaborating on City expectations for this Report can be obtained by contacting the Public Works Department Clean Water Program staff, telephone 510-749-5840.

E) Operation and Maintenance Plan

- For any project implementing permanent stormwater treatment measures, prior to the approval of the Final Map, issuance of a grading permit, building permit or certificate of occupancy (whichever is deemed appropriate by the Public Works Director), a Stormwater Treatment Measures Operations and Maintenance (O&M) Plan shall be submitted by the project proponent for approval by the Public Works Director.
- The O&M plan shall include, but not be limited to:
 1. Treatment measure(s) descriptions and summary inventory;

REQUIRMENTS FOR STORMWATER QUALITY PROTECTION

2. A legible, recordable, reduced-scale (8.5x11) copy of the Site Plan indicating the treatment measure(s) location(s) and site drainage patterns;
 3. Treatment measure(s) maintenance requirements and maintenance schedule;
 4. Detailed description of the integrated pest management principals and techniques and/or Bay Friendly Landscaping Program techniques to be utilized during landscape maintenance to ensure pesticide/herbicide use-minimization in landscaped areas;
 5. Name and contact information of current maintenance personnel;
 6. Estimates of annual treatment measure(s) maintenance costs.
- A copy of the checklist for preparing this O&M Plan can be obtained by contacting the Public Works Department Clean Water Program staff, telephone 510-749-5840.

F) Operations and Maintenance Agreement

- For any project implementing permanent stormwater treatment measures, prior to the issuance of the certificate of occupancy, a Stormwater Treatment Measures Maintenance Agreement (Agreement) shall be executed between the Project Owner and the City and recorded with the County Recorder's Office of the County of Alameda.
- The Agreement shall include, but not be limited to:
 1. An Operations and Maintenance (O&M) plan, approved by the Public Works Director, for all post-construction (permanent) stormwater treatment measures;
 2. An instrument of financial assurance (i.e., a performance bond) from the party responsible for stormwater treatment measures O&M;
 3. Assurances of the party responsible for stormwater treatment measures O&M;
 4. Assurances of access to inspect and verify the treatment system O&M for the life of the project;
 5. Assurances of the submittal of the annual O&M report approved by the City.
- Contact the City's Public Works Department Clean Water Program staff, telephone 510-749-5840, for more information about executing this Agreement.